

# **Overview of injuries from falls among seniors in Hawaii**

*Dan Galanis, Ph.D.  
Injury Prevention and Control Program  
Hawaii Department of Health  
1250 Punchbowl St., Room 214  
Honolulu, HI 96813  
Ph: 586-5943  
E-mail: [daniel.galanis@doh.hawaii.gov](mailto:daniel.galanis@doh.hawaii.gov)*

# Overview of presentation

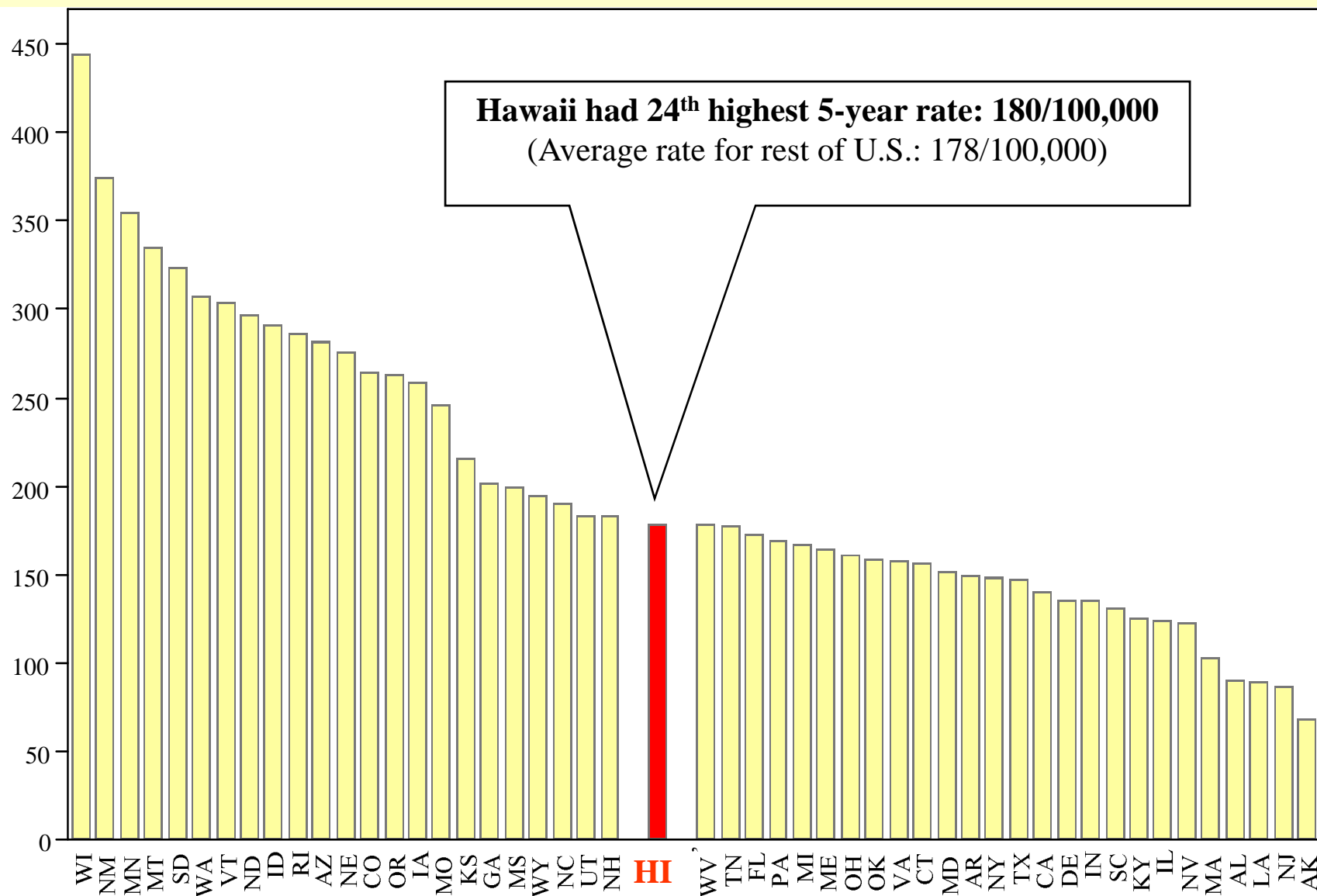
- **Importance of fall prevention among seniors**
- **Fatal falls (2001-2006)**
  - *Comparisons w/ rest of U.S.*
  - *Local description*
    - *Trends, demographics of victims, geography*
  - *Leading causes of injury-related death among seniors*
    - *Limitations of death certificate data*
- **Non-fatal injuries from falls (2003-2006)**
  - *Emergency department (ED) visits and hospitalizations*
    - *Trends, demographics of victims, geography*
    - *Medical charges, clinical data and disposition*
  - *EMS data (2007)*

# Importance of fall prevention:

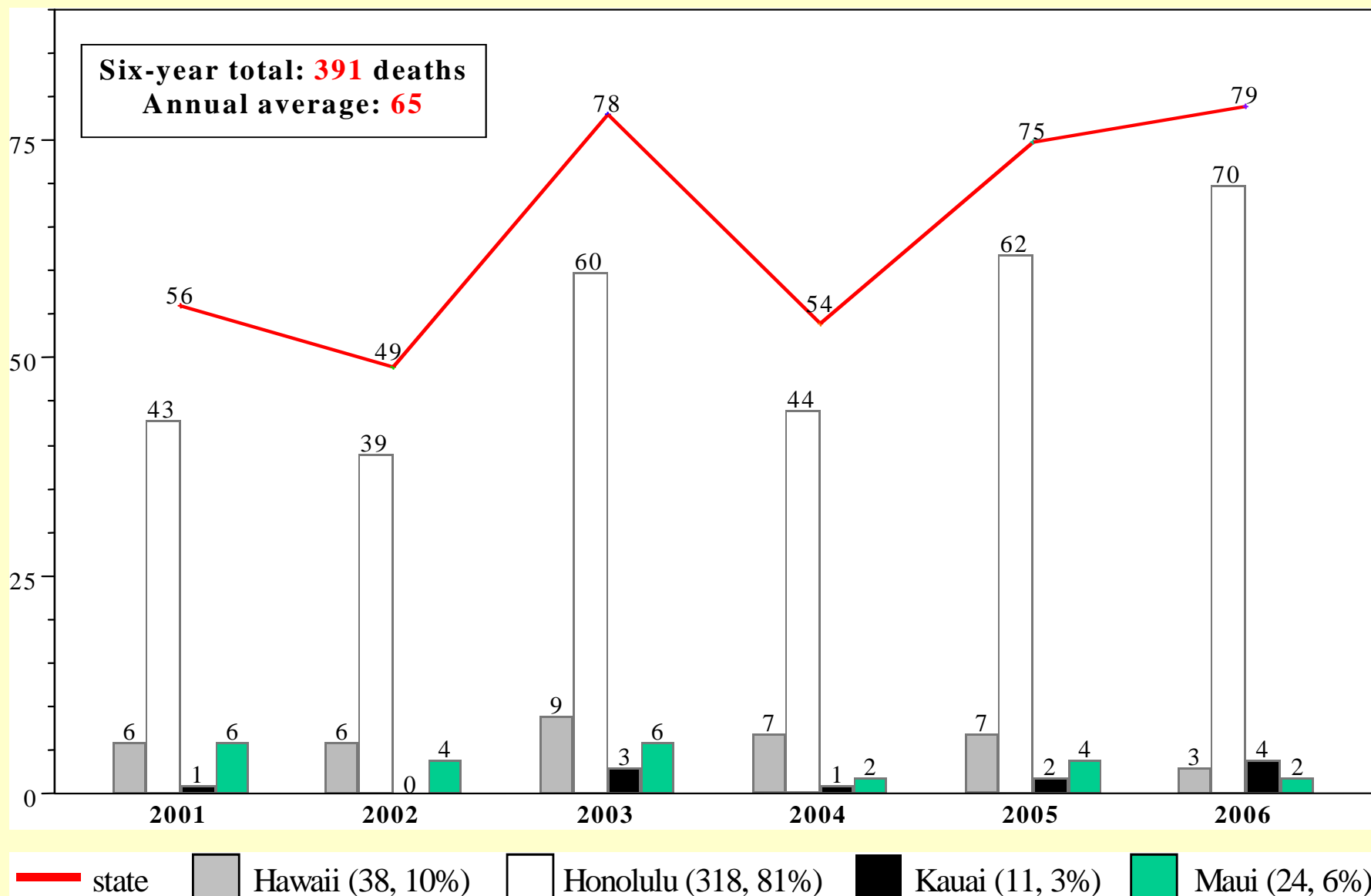
## *Falls among seniors in Hawaii are...*

- The **3<sup>rd</sup> leading** cause of fatal injuries for residents of all ages (11%)
  - The **leading** cause of fatal injuries among seniors (37%)
- The **leading** cause of injury-related hospitalizations for all ages (29%)
  - The **leading** cause of injury hospitalizations among seniors (81%)
- The **leading** cause of hospitalizations for TBI for all ages (27%)
  - The **leading** cause of hospitalizations for TBI among seniors (81%)
- The **6<sup>th</sup> leading** cause of injury-related ED visits for all ages (6%)
  - The **leading** cause of injury ED visits among seniors (58%)
- The **2<sup>nd</sup> leading** cause of injury-related EMS calls (20%)
  - The **leading** cause of injury-related EMS calls among seniors (81%)

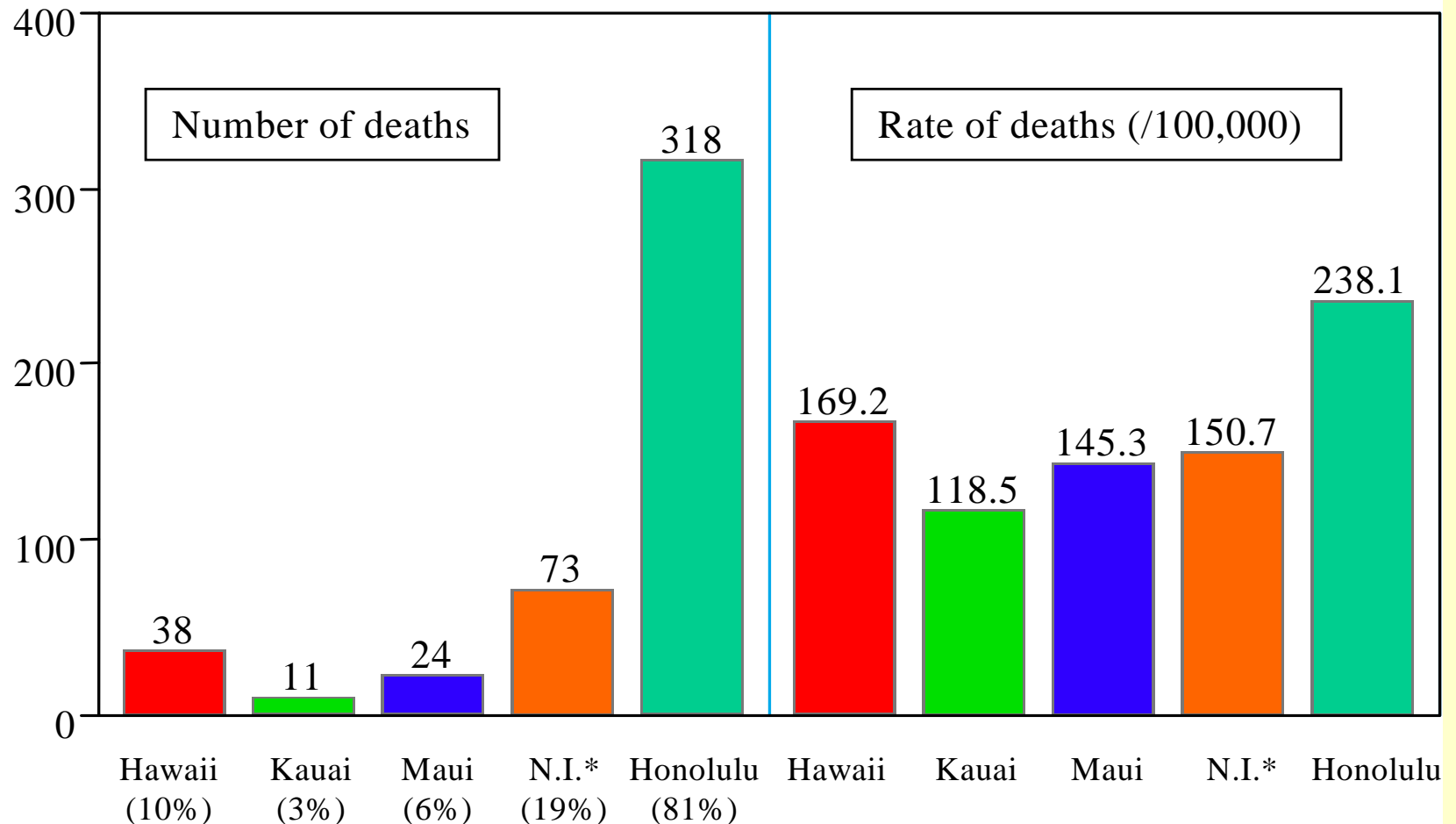
# Fatal fall rates among seniors in the U.S., by state, 2000-2004.



# Annual number of fatal falls among senior residents of Hawaii, by county, 2001-2006

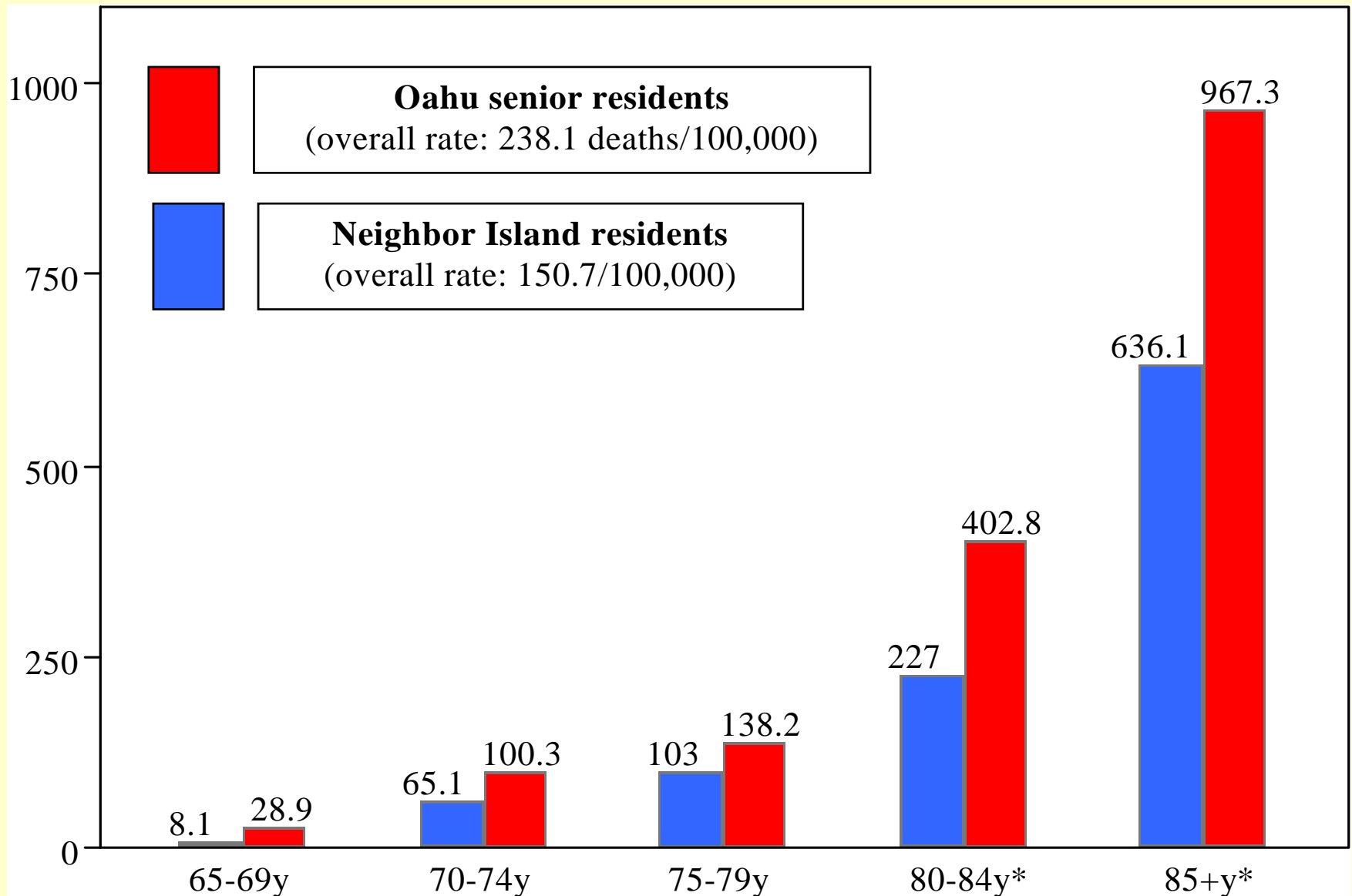


## Number and rate of fatal falls among senior-aged residents in Hawaii, by county of injury, 2001-2006.



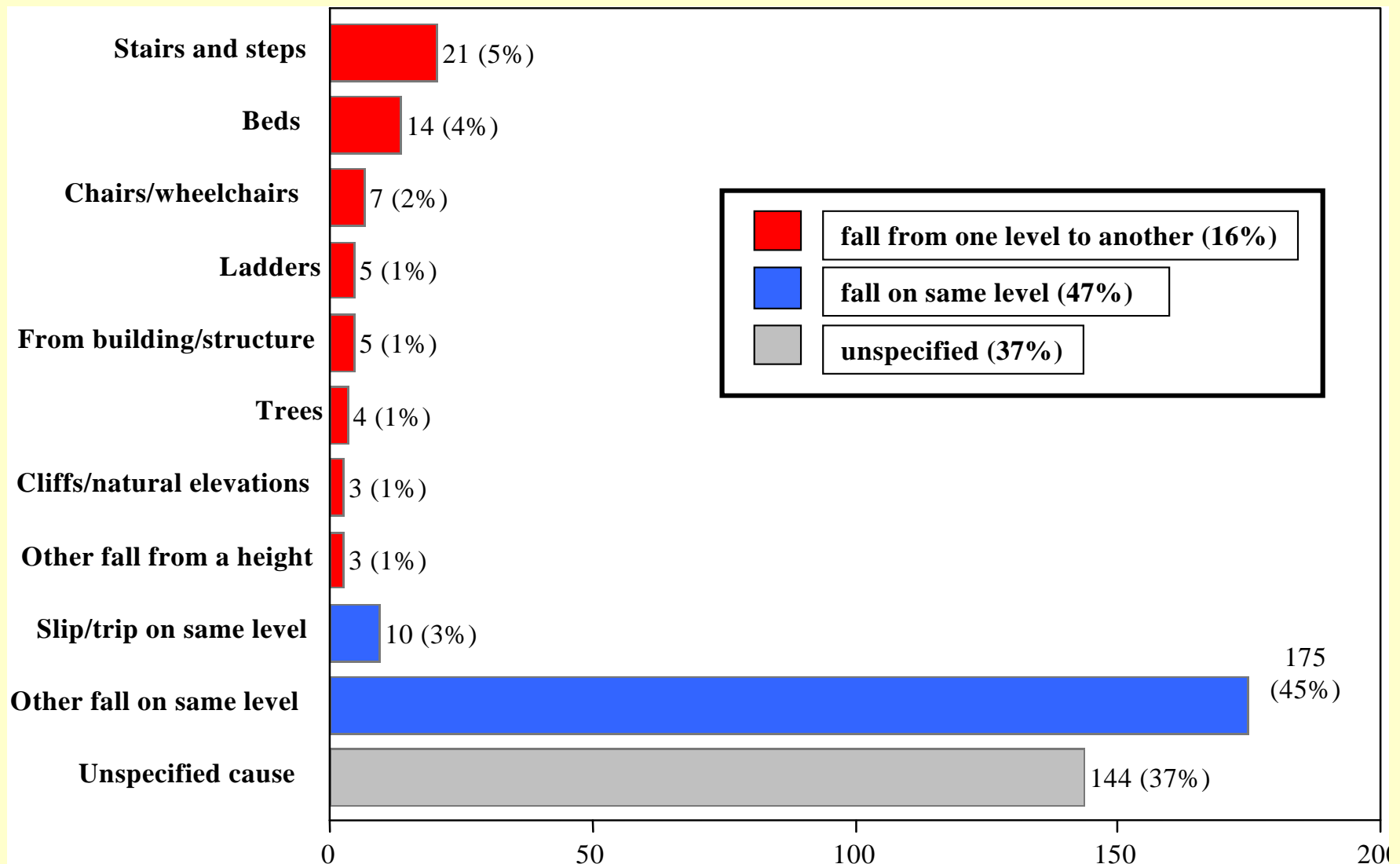
\*N.I. = Neighbor Islands (combined totals for Hawai'i, Kaua'i, and Maui counties.)

## Six-year rates of fatal falls among senior-aged residents of Oahu and the Neighbor Islands, by age group, 2001-2006.



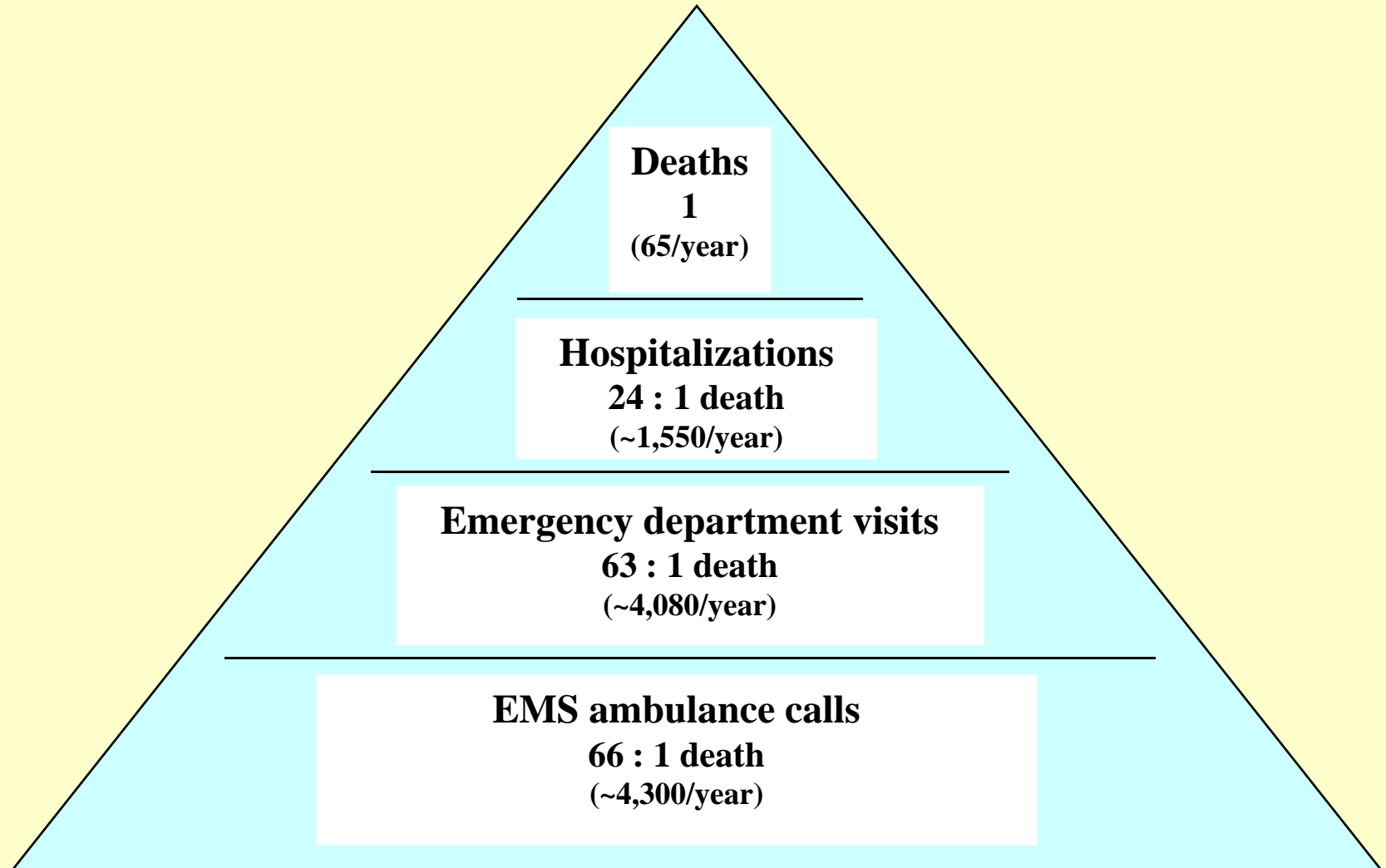
# Causes of fatal falls among seniors in Hawaii, 2001-2006:

Limitations of data from death certificates.





# The “injury pyramid” for falls among senior residents of Hawaii, 2001-2006

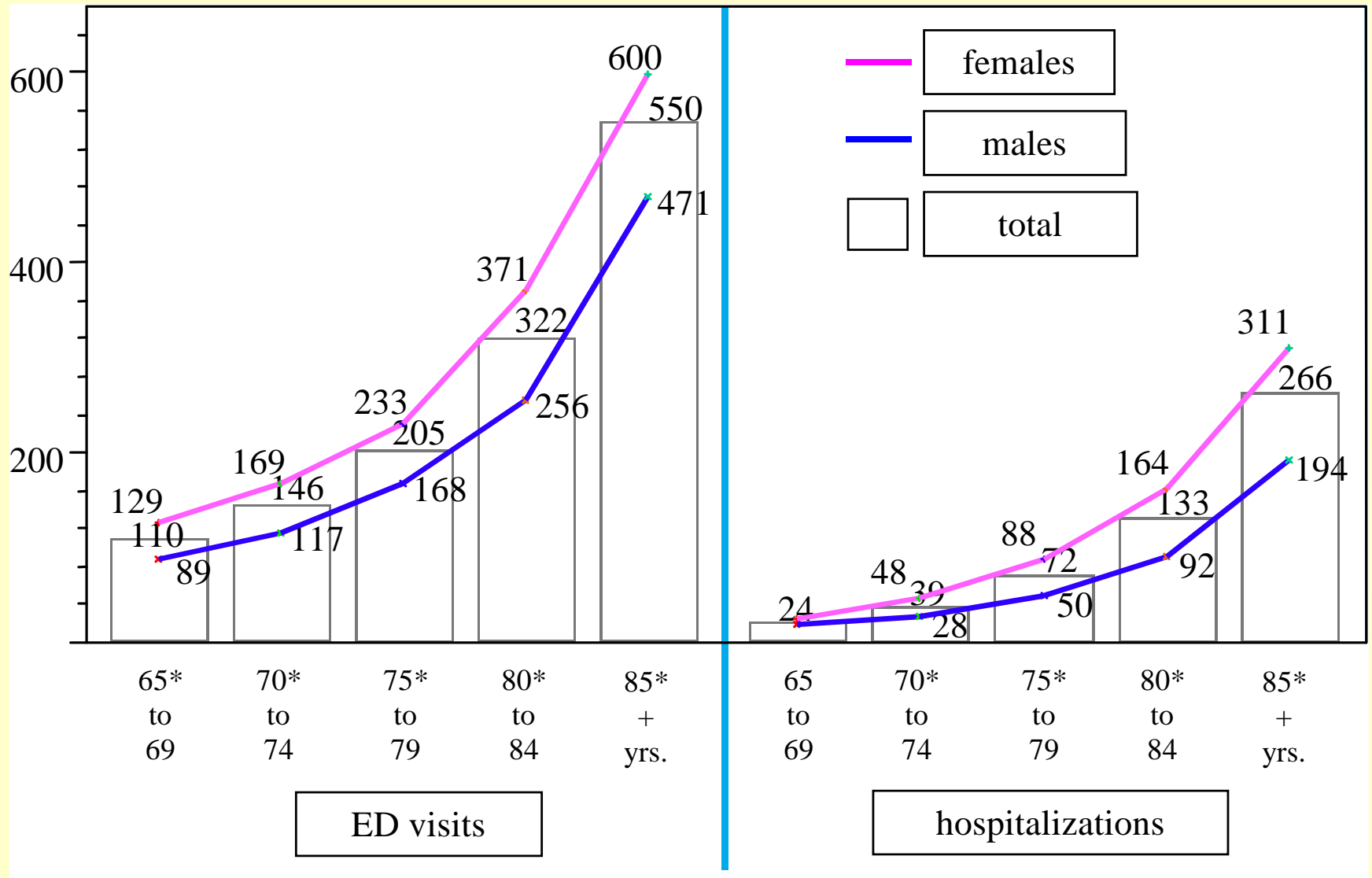


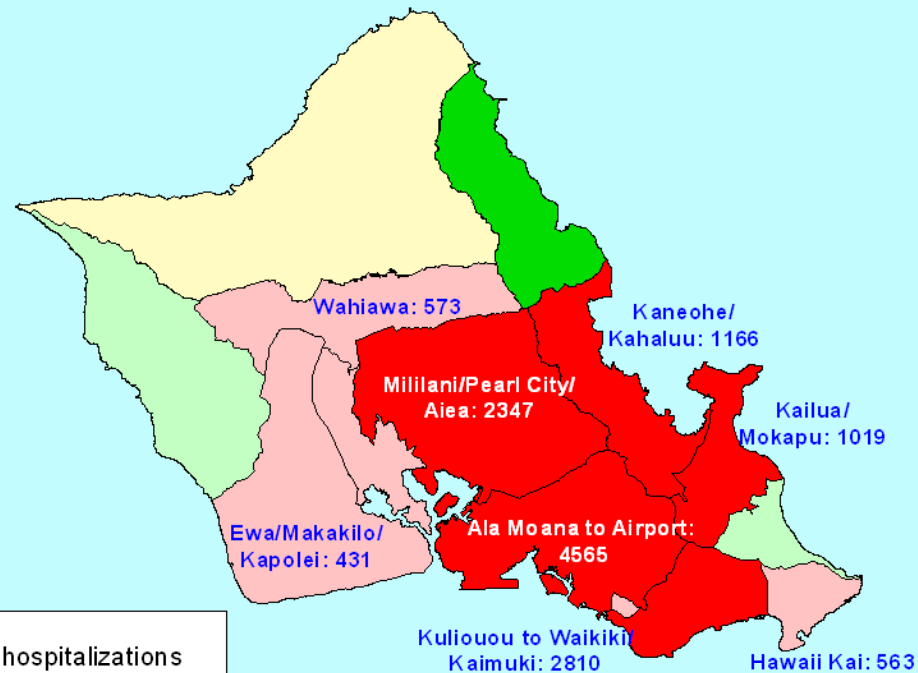
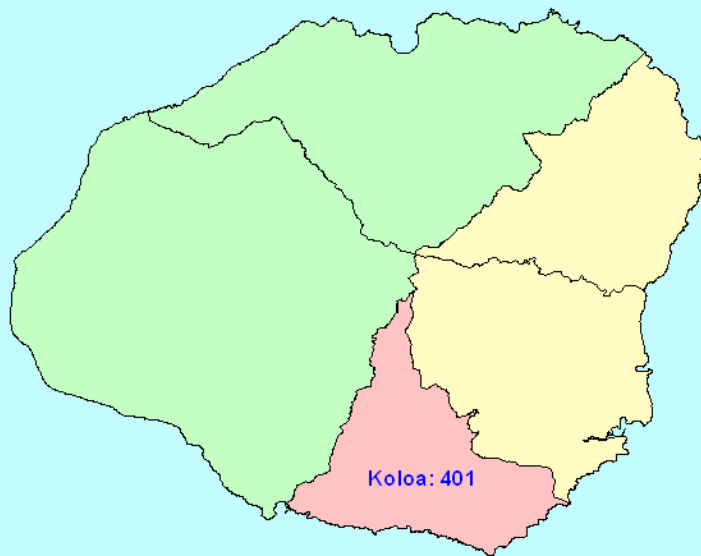
**Hospitalizations and emergency department  
visits for non-fatal falls among seniors in  
Hawaii, 2003-2006**

# **Non-fatal injuries from falls among senior residents in Hawaii, 2003-2006.**

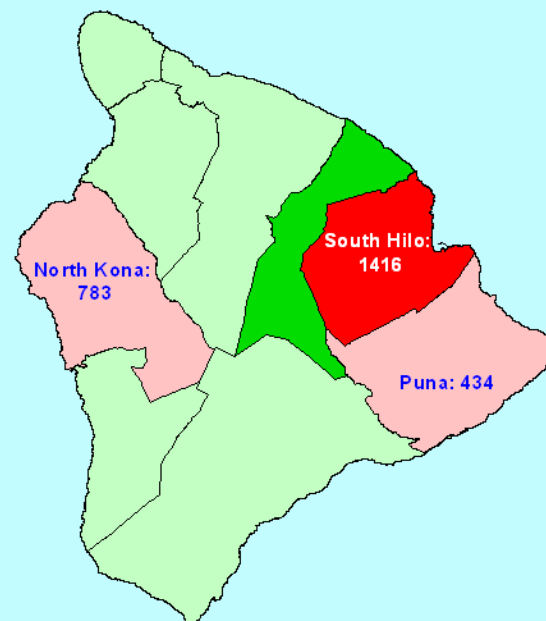
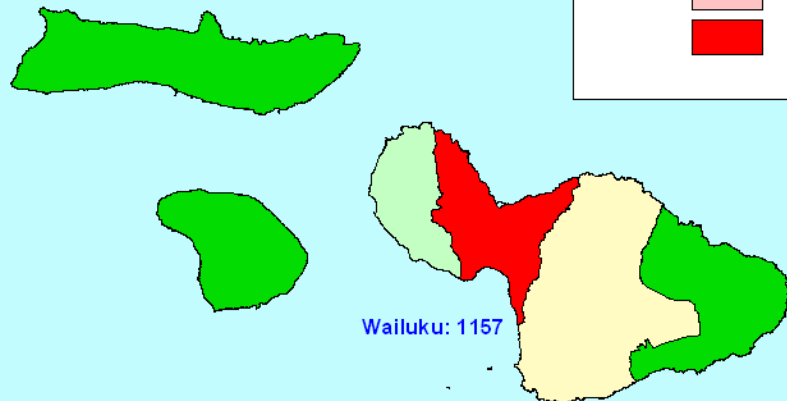
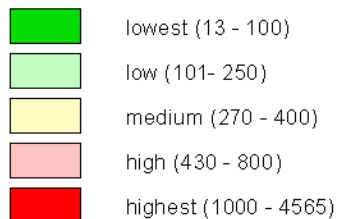
- **Over 5,600 E-coded non-fatal injuries from falls per year (~6,650 actual?)**
  - *Most injuries (72%) treated in EDs*
    - *Increasing trend in ED visits: 3,344 in 2003 → 4,642 in 2006*
    - *No trend in hospitalizations (~1,550 per year)*
- **Number and rate increases with age**
  - *One third (35%) 85 years or older (42% of those hospitalized)*
  - *Rates among 85+ year-olds are 5 (ED visits) to 11 (hospitalizations) times higher than 65-69 year-olds*
- **Mostly (67%) female**
  - *Females have higher rates at every age group*
- **Geographic location**
  - *Highest ED visit rates for Kauai and Hawaii County*
  - *Highest hospitalization rates for Maui County*
  - *Generally low rates for Oahu residents*

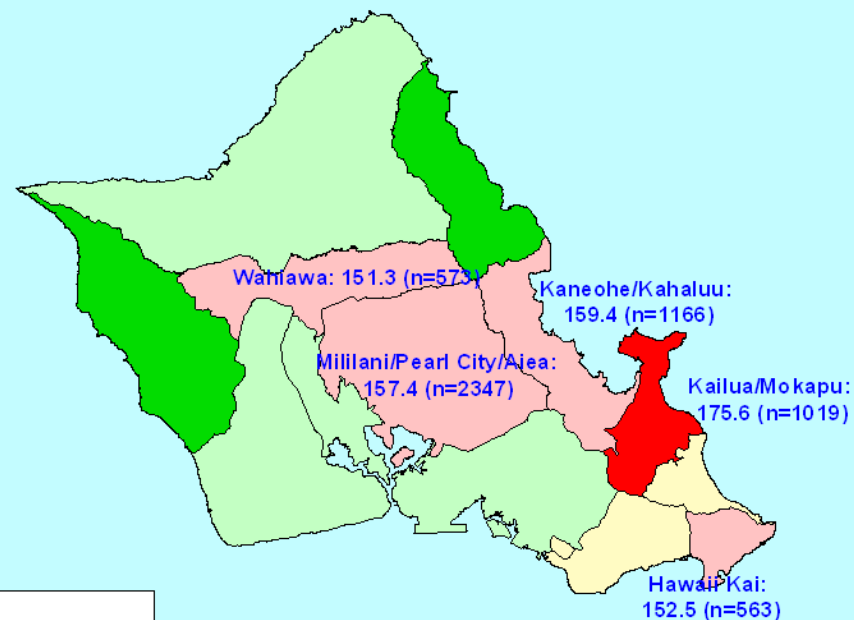
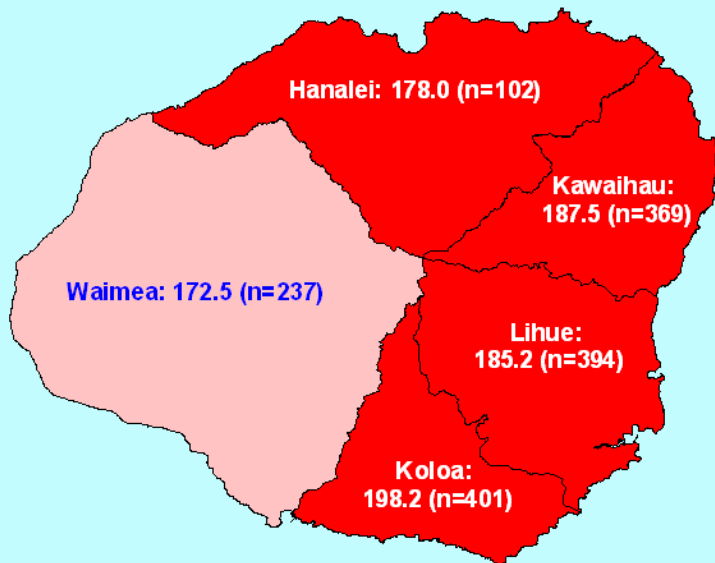
# Rates (per 10,000 residents) of non-fatal injuries from falls among senior residents of Hawaii, by gender and level of care.



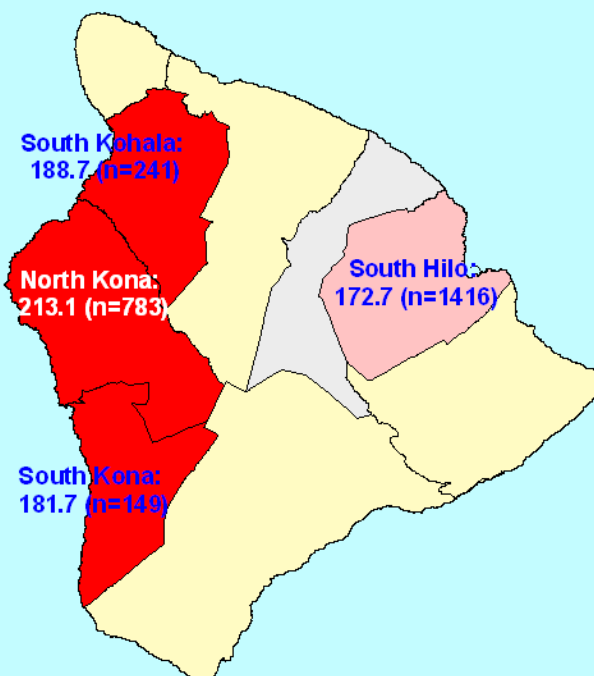
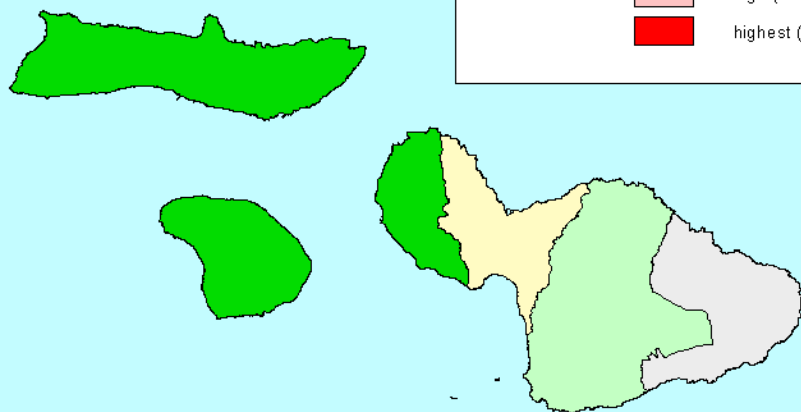
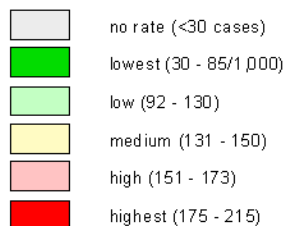


### Number of ED visits and hospitalizations





Rates (/1,000 residents) of ED visits and hospitalizations



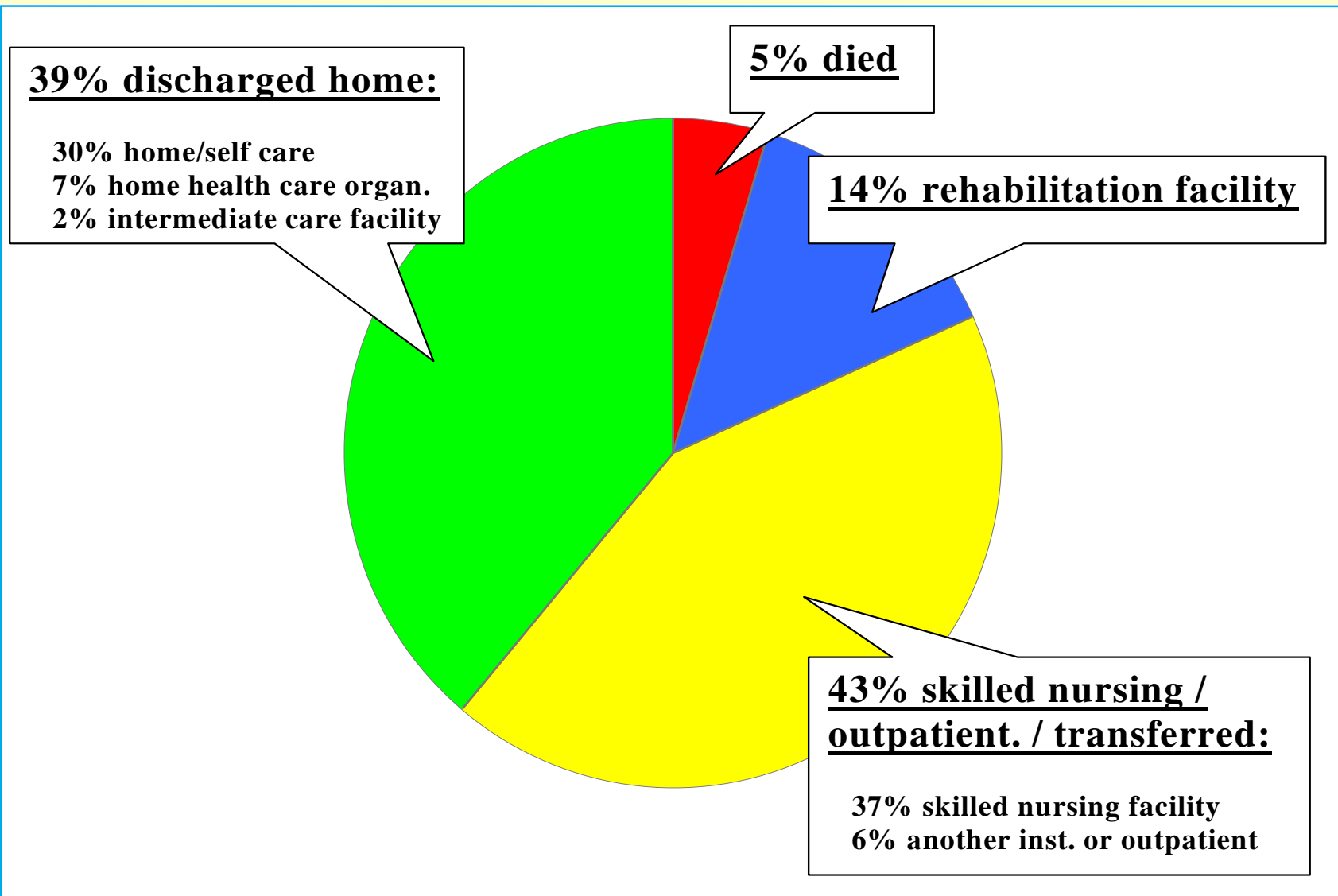
## Non-fatal injuries from falls among senior residents in Hawaii, 2003-2006. (cont.)

- **The causes of falls were mostly vague or unknown**
  - *~80% coded as “falls on same level” or “other/unspecified”*
  - *Falls from stairs/steps and beds most commonly specified (~4%)*

Clinical data:

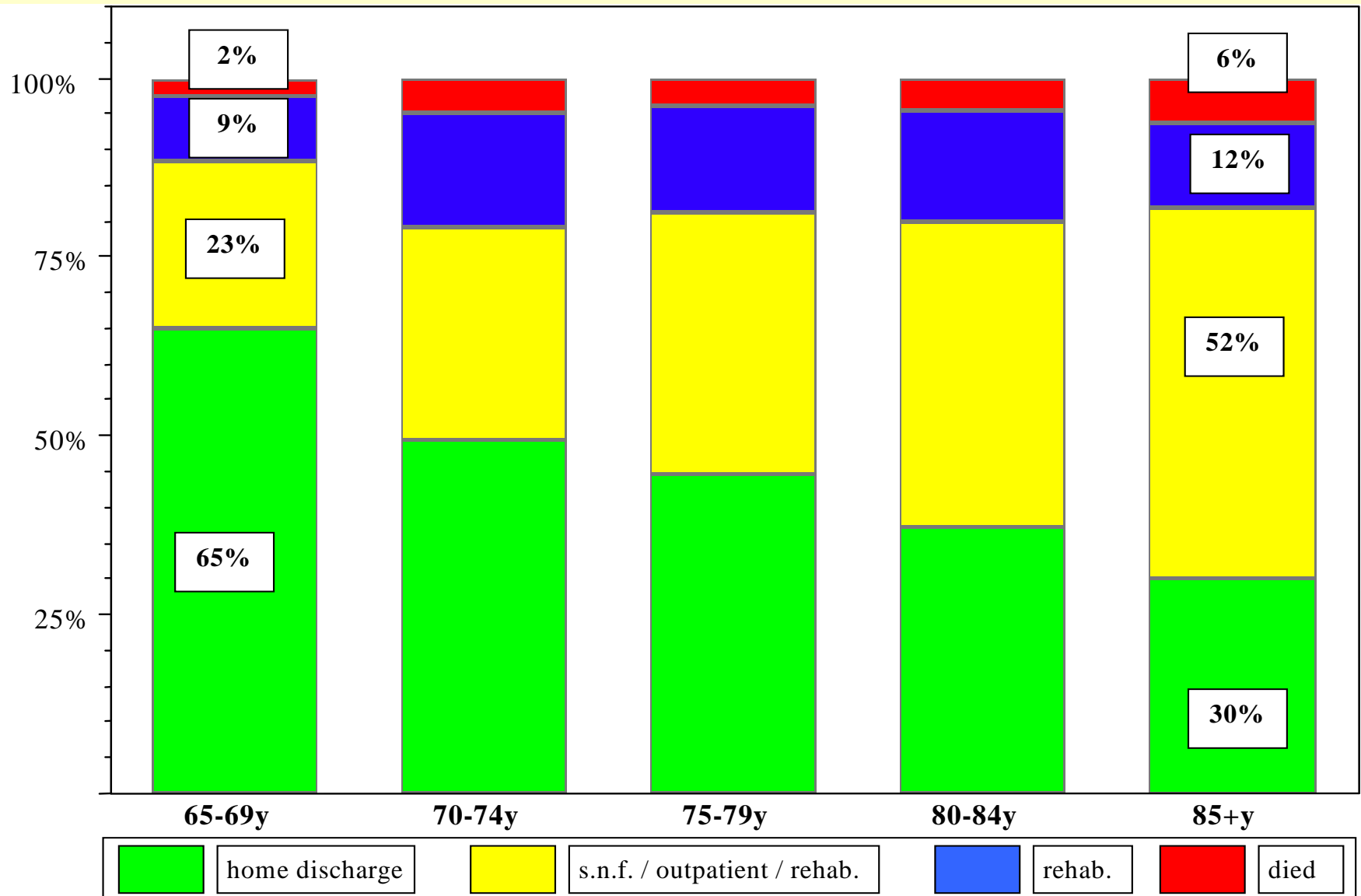
|   | ED visits            | Hospitalizations               | Total                 |
|---|----------------------|--------------------------------|-----------------------|
| <i>Length of stay and medical charges</i> |                      |                                |                       |
| <b>Patient days</b>                       | <b>4,080</b>         | <b>11,958 (8 days/patient)</b> | <b>16,038</b>         |
| <b>Average charge</b>                     | <b>\$1,598</b>       | <b>\$25,627</b>                | <b>\$8,233</b>        |
| <b>Total charges</b>                      | <b>\$6.5 million</b> | <b>\$39.7 million</b>          | <b>\$46.3 million</b> |
| <i>Primary injury diagnoses</i>           |                      |                                |                       |
| <b>Fractures</b>                          | <b>24%</b>           | <b>75%</b>                     | <b>38%</b>            |
| <b>hip fractures</b>                      | <b>0.6%</b>          | <b>43%</b>                     | <b>12%</b>            |
| <b>Internal injuries</b>                  | <b>3%</b>            | <b>17%</b>                     | <b>7%</b>             |
| <b>Open wounds</b>                        | <b>24%</b>           | <b>1%</b>                      | <b>18%</b>            |
| <b>Contusions/superficial</b>             | <b>32%</b>           | <b>3%</b>                      | <b>24%</b>            |
| <b>Traumatic brain injury</b>             | <b>14%</b>           | <b>20%</b>                     | <b>16%</b>            |

## Disposition of senior residents hospitalized for falls in Hawaii, 2003-2006.



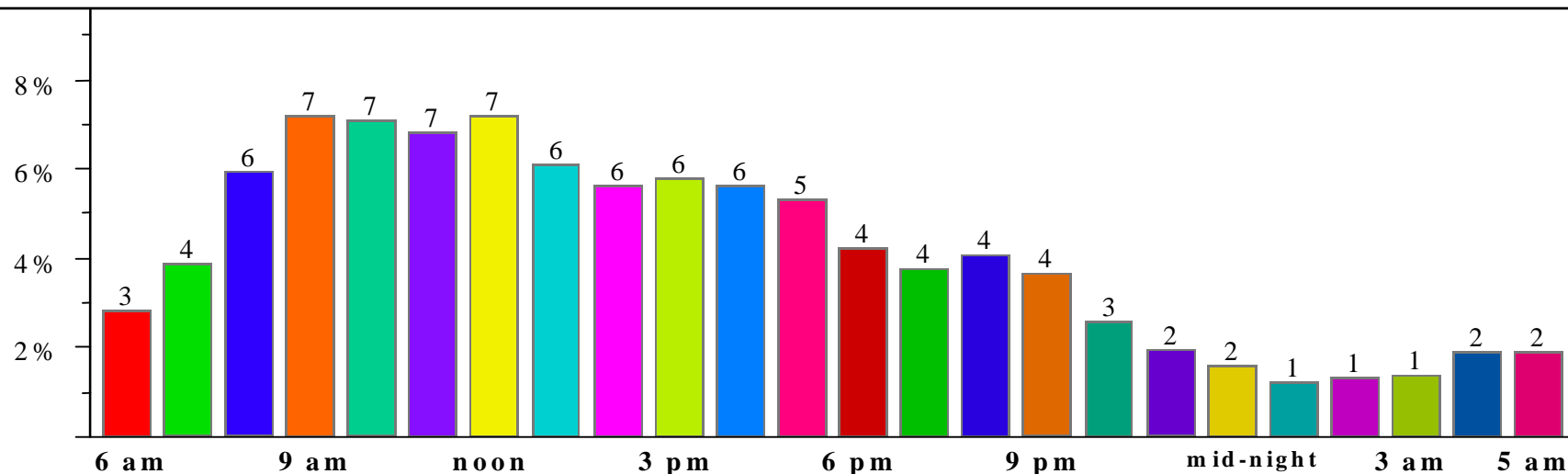


## Disposition of senior residents hospitalized for falls in Hawaii, by age group, 2003-2006.



# Time of fall among senior residents of Hawaii: EMS data, 2007

Mostly (71%) during daylight hours; peak from 8 a.m. to 5 p.m. (63%).



## Place of fall among senior residents of Hawaii:

Mostly at home, especially for more seriously injured (older) patients.

| <i>Place</i>                   | EMS calls  | ED visits  | Hospitalizations | Deaths     |
|--------------------------------|------------|------------|------------------|------------|
| <b>Residence</b>               | <b>63%</b> | <b>53%</b> | <b>71%</b>       | <b>69%</b> |
| <b>Residential institution</b> | <b>5%</b>  | <b>5%</b>  | <b>8%</b>        | <b>7%</b>  |
| <b>Public building</b>         | <b>4%</b>  | <b>6%</b>  | <b>4%</b>        | <b>1%</b>  |
| <b>Recreation area</b>         | <b>2%</b>  | <b>1%</b>  | <b>0.7%</b>      | <b>0%</b>  |

## Data summary

- Who?** Risk increases greatly across senior age range.  
Men have higher fatality rates, but women have higher rates of ED visits and hospitalizations.
- Where?** Highest numbers (~70%-80%) for Oahu residents, who also have significantly higher fatality rates  
Highest rates for ED visits for Kauai and Hawaii residents; Maui County residents have highest rates of hospitalizations.
- When?** Mostly daylight hours; especially mid-day
- Why?** Poor information for fatalities and hospitalizations; probably multi-factorial causes (intrinsic and extrinsic factors).